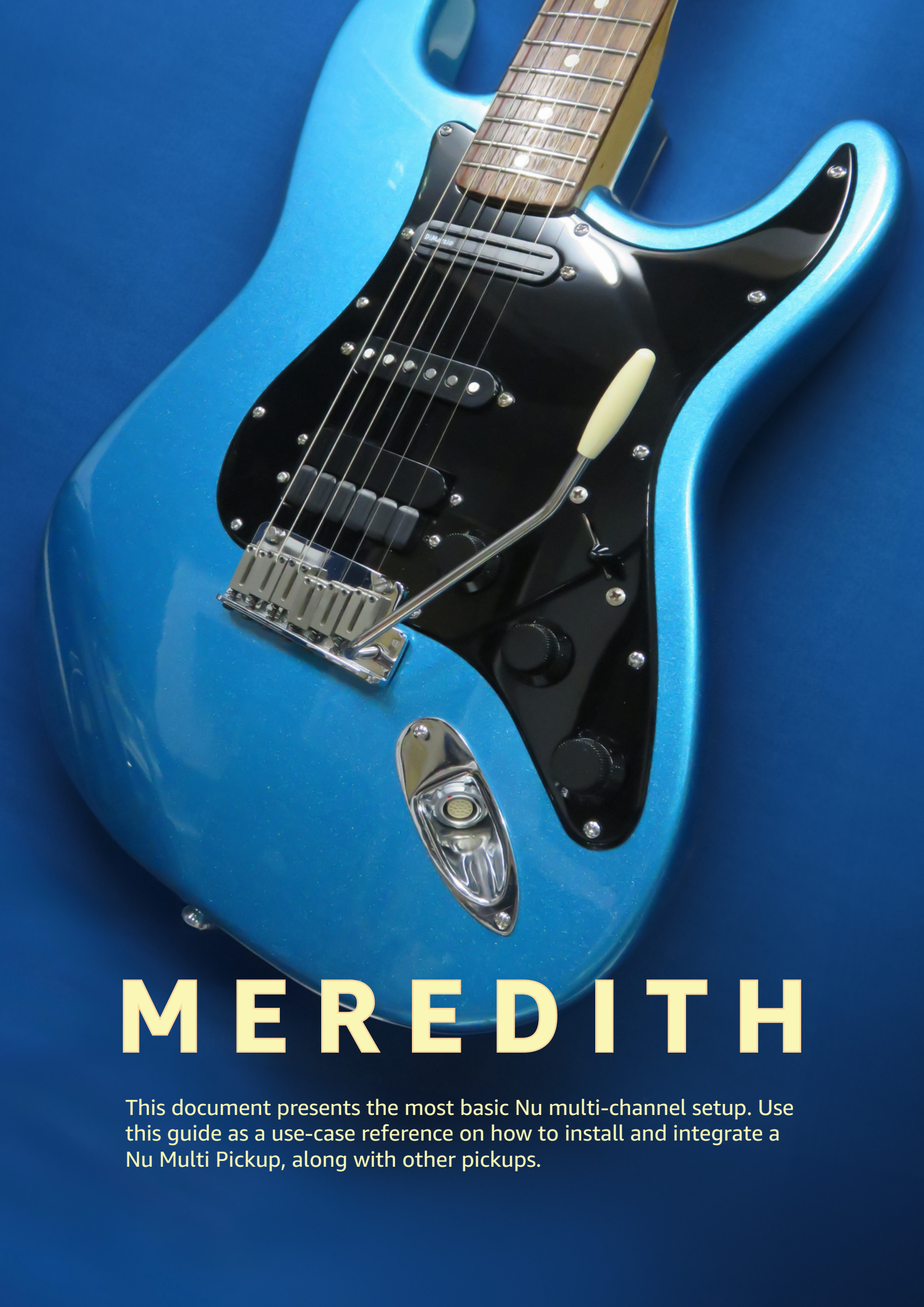

MEREDITH

This document presents the most basic Nu multi-channel setup. Use this guide as a use-case reference on how to install and integrate a Nu Multi Pickup, along with other pickups.

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Meredith — The Nu Multi Reference Guitar

Overview

The Nu Multi is an active multichannel pickup utilizing one sensor per string. It is designed for independent processing with separate effects chains for each string, thus allowing different effects settings for distortion, EQ, compressor, delay, pan, pitch-shift, etc. Such extensive processing is now very possible due to advances in signal processing.

This document presents the most basic Nu multi-channel setup: Meredith—the Nu Multi Reference Guitar Use this guide as a use-case reference on how to install and integrate a Nu Multi Pickup, along with other pickups. This is just one example, intentionally kept as simple as possible to get you started quickly. There are many ways to use the Nu system. Hopefully, this tutorial will inspire you further with more ideas. This guide also serves as an installation tutorial. The aim is to start with something simple and gradually add more features as you gain familiarity with the system. The knowledge gained from such a simple arrangement can be used and extended to construct more complex systems.

Basic Setup

While Meredith appears to have an SSH pickup configuration, what you are seeing is an SSS pickup configuration with a standard pickup at the bridge position alongside a Nu Multi 6 multichannel pickup. Passive pickups are chosen for this installation: Dimarzio Injector at the neck position, Dimarzio Area ‘67 at the middle position, and Dimarzio Chopper at the bridge position. These are all noise-cancelling pickups.

> ✏️ It is also possible and often desirable to install active pickups together with the Nu Multi, which are also active pickups. Active pickups can share power with the Nu Multi.

The passive pickup system has simple controls: one master volume, one master tone, and a 5-way switch. The Nu system can accommodate up to 15 channels of audio or control voltage. The output, coming from the master volume, is connected to channel 9.

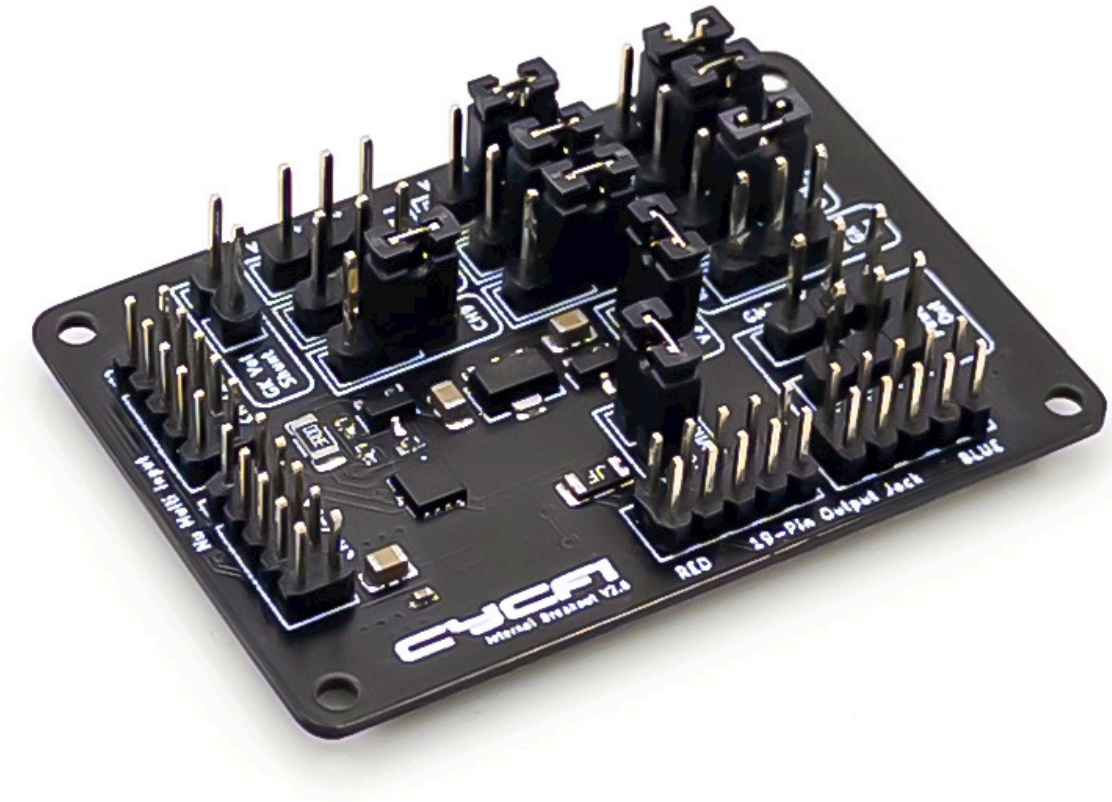
Control voltages allow remote control of volume, tone, patch, or effects. Typically, control voltages are converted to MIDI. A single general-purpose control voltage potentiometer (CVP) is connected to channel 11 for remote control of external devices.

> ✏️ We won’t go into detail about the wiring of the passive pickups and associated controls. You can get tutorials on the subject on the internet.

The Internal Breakout

The Internal Breakout is the central hub that connects the Nu Multi pickup, monophonic pick-ups, and other controls to the outside world. The compact breakout board includes pins for 15 channels of combined audio and analog control voltages (CV) and switches (SW). Audio inputs can come from the Nu Multi pickup as well as other monophonic sources like standard active and passive guitar pickups. Control voltages and switches allow remote control of volume, tone, patch, or effects.

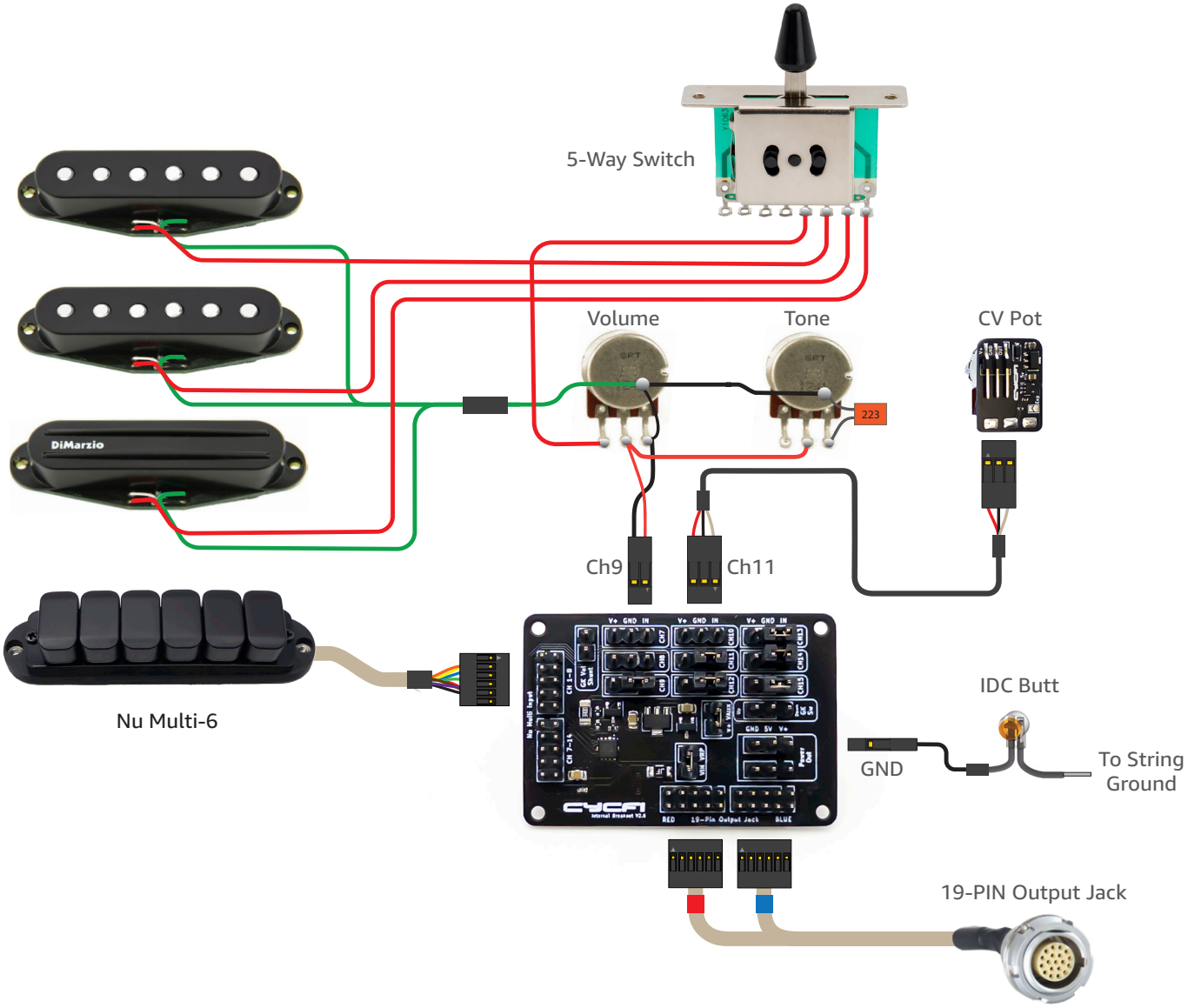
> ✏️ **Note:** In this document, the terms “control voltage” and “switch” are abbreviated as CV and SW respectively.



The Nu Multi is connected to the Internal Breakout board through a multicore cable and other sources through EMG-style 3-pin cables. The breakout board allows easy access to all signals via standard header 2.5 mm and 2 mm connectors.

See Internal Breakout 2.6 for details.

Reference Wiring Diagram



The Internal Breakout has inputs for 15 channels of combined audio and analog control voltages and switches, for remote control of volume, EQ, patch or effects. Audio may come from standard mono-pickups or the Nu multichannel pickup. In our case we use Ch9 (See Connecting External Pickups to the Internal Breakout section below) to connect the output of the passive pickup system, coming from the master volume.

> ✏️ **Note:** While the diagram shows simple wires for the SSS wiring, we actually use shielded wires all throughout (highly recommended).

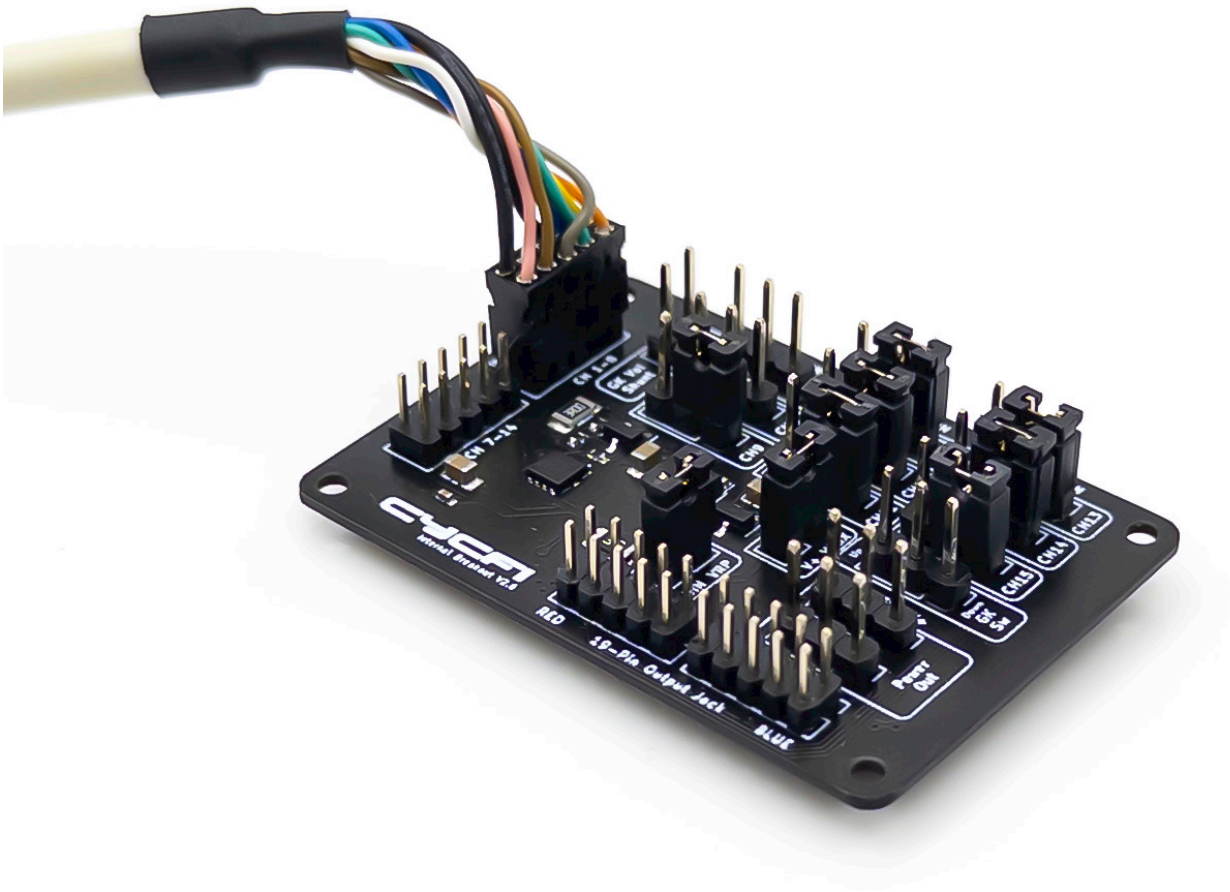
The Nu Multi pickup connects to the Internal Breakout via multi-core 2mm connectors. For remote control of external devices (such as effects), we also added one CV (Control Voltage) potentiometer, connected to Ch11. This will allow us to send a control voltage over to the MIDI module (See Connecting CV Pots/Switch (SW) below). The Internal Breakout can accommodate up to 9 CV/SW inputs (Ch7 – Ch15 are configurable as audio or CV/SW). Each CV/SW channel is assigned to support specific MIDI messages (See Nexus-GK for more info).

Connecting the Nu Multi

Follow these instructions to connect the multicore cable to the Nu Multi pickup. Before connecting, inspect the color coding of the multicore cable's wires. Insert the multicore cable's 2x5P, 2mm connector into the header on the bottom of the Nu Multi Pickup. Ensure that the orange wire is aligned with the connector at the top of the upper row on the header, when viewed as in the picture below.

The Nu Multi pickup will not be damaged when the connectors are inserted incorrectly, but the pickup will not produce any sound. The correct insertion and orientation of the connectors is essential for proper operation.

After connecting one end of the multicore cable to the Nu Multi pickup, connect the other end of the cable to the Internal Breakout. Again, take note of the color coding. Refer to the orange wire as a guide. Make sure that the orange wire is at the top pin of the upper row of the header, when viewed as in the picture below.



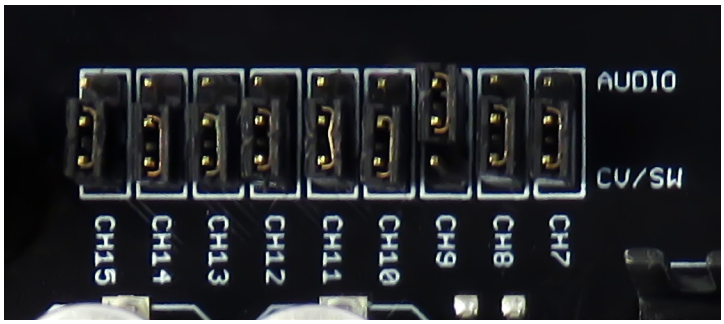
⚠ **Warning**: Under no circumstances should you attempt to connect the Nu Multi pickup while power is on. This action can lead to damage to the device, and/or connected equipment. Always disconnect power sources before making any connections.

CH8		CH7	
CH6		CH5	
CH4		CH3	
CH2		CH1	
GND		V+	

Nu Multi Cable Color Code

Connecting External Pickups

There are up to 9 channels available (Ch7–Ch15) that you can use to connect external pickups on the Internal Breakout. These channels are configurable to be either audio input or CV/SW input on the Nexus-GK main board (see picture at the right). If you intend to connect an external pickup or audio source to one of these channels, be sure that the shunt in the Nexus-GK main board is configured as audio input for that channel.



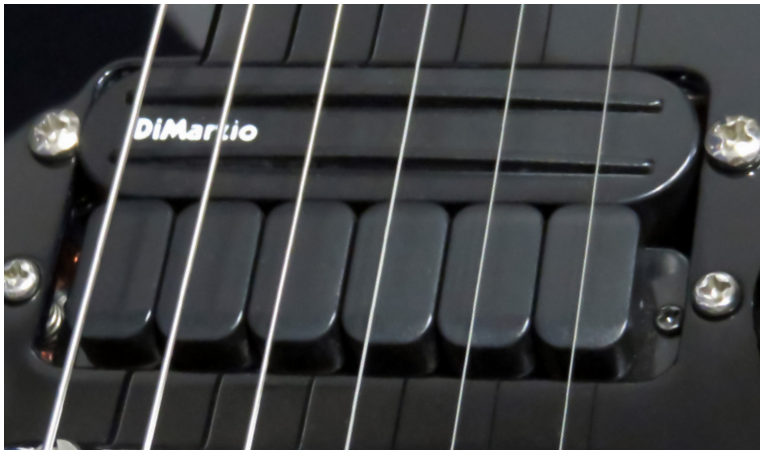
See Nexus-GK for more info, but take note that by default, only channel 9 is assigned to Audio for channels 7-15. All the rest are assigned to CV. This is just fine in our particular use-case, but be aware of this when your use-case require more than one auxiliary channels.

Hacking the DiMarzio Pickup

You have the flexibility of pairing the Nu-Multi with any single-width pickup. In the case of the Meredith Reference Guitar, we decided to combine a DiMarzio Chopper rails pickup with the Nu-Multi, positioning it at the bridge. However, this setup presents a challenge (illustrated in the left-side image). Conventional Strat-style pickups feature an additional board at the bottom where the wires are connected.

To align the Chopper pickup alongside the Nu Multi, we had to had to chop off that pickup's base. This procedure can be intricate, and I would advise against attempting it unless you possess a solid understanding of the process. Pickups without the additional base, such as Lace Sensors and EMG single coils, are good alternatives to consider.

Passive Pickups

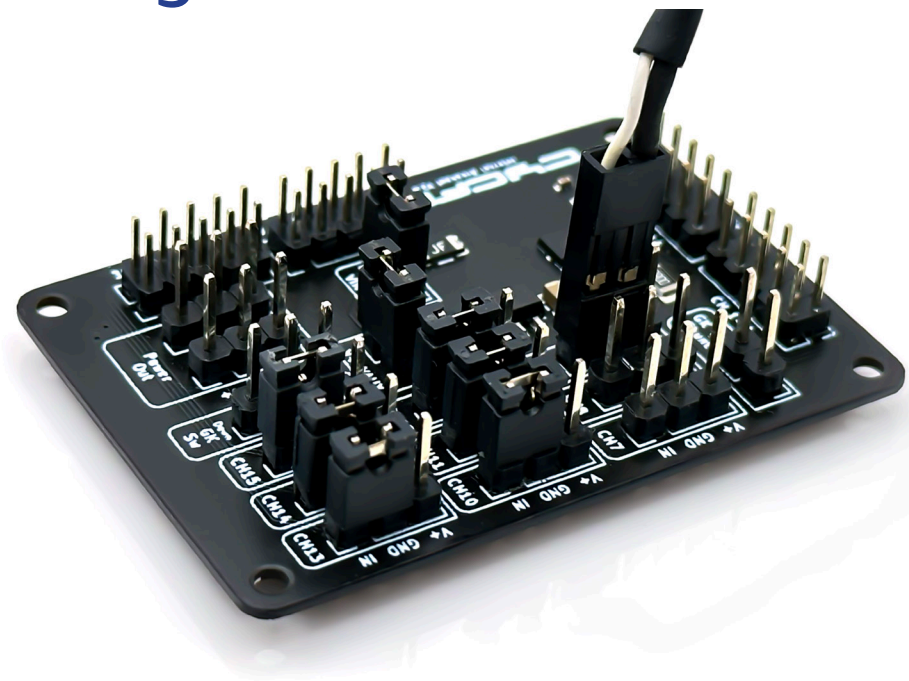


Refer to the Reference Wiring Diagram.

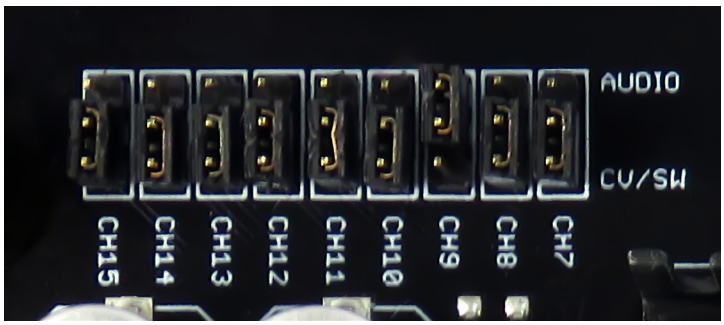
The wiring diagram shows the signal path from the three passive pickups, which passes through the 5-way switch and then to the volume control and tone control before connecting to channel 9 of the Internal Breakout. Optionally, it would have been possible to connect the outputs of each pickup to separate channels. For example, you can connect the bridge pickup to channel 9, the middle pickup to channel 10 and the neck pickup to channel 11. In this example, we keep it simple by utilizing just one channel (9), for the main output after the volume control.

When connecting passive pickups to the Internal Breakout, you can use a 2-pin cable for the output and ground/shield connections, as shown below. In this example, the cable is connected to channel 9.

Connecting CV Devices



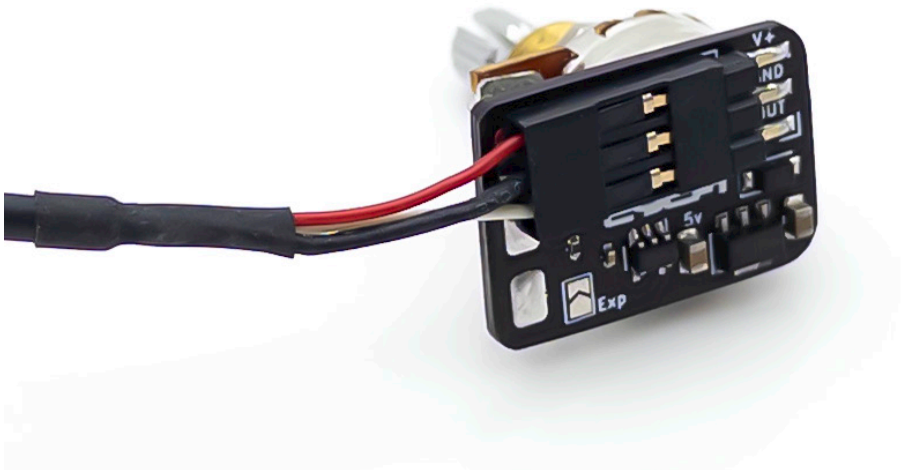
You have the option to use up to 5 channels (Ch10–Ch15) of the Internal Breakout for connecting CV devices like potentiometers and switches. These channels allow you to configure them for either audio input or CV input on the Nexus-GK Main board. If intend to connect a CV potentiometer or CV switch, make sure that the shunt on the Nexus-GK Main board is set up to function as a CV input, as shown in the image on the right.



For more detailed information, please refer to the Nexus-GK documentation.

CV Pot

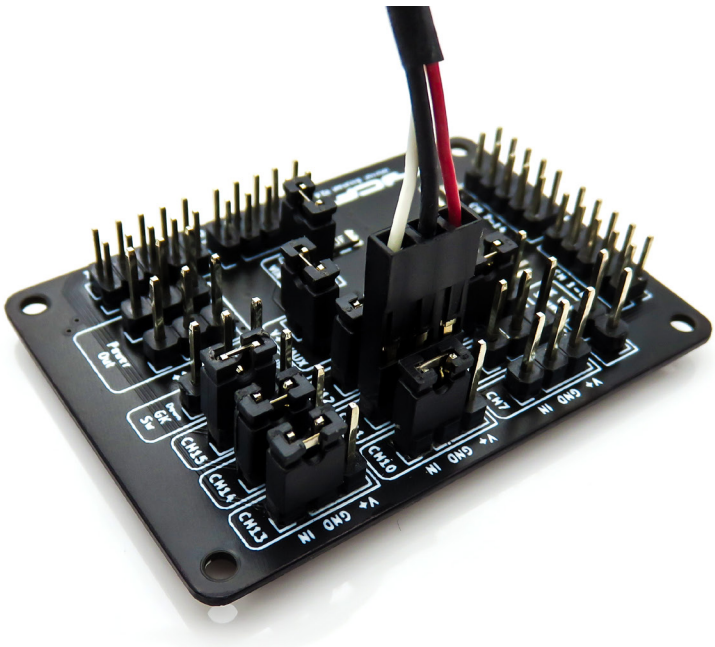
In this example, a single general-purpose control voltage potentiometer (CVP) is connected to channel 11 for remote control of external devices. To install a CV potentiometer, connect a 3-pin cable to its header, following the orientation shown below. Take note that when holding the cable vertically with the connector at the top, the red wire should be on the left, the black wire in the middle, and the white wire on the right.



Then, remove the factory-installed shunt for the desired channel (in this example, channel 11) from the Internal Breakout, and insert the other end of the 3-pin cable as shown below. Take note that the red wire connects to the V+ label in the Internal Breakout.

> ✏️ **Note:** Unused audio and CV channels should be tied to ground with a shunt in the Internal Breakout. These shunts are preinstalled from the factory for all auxiliary channels (Ch7–Ch15).

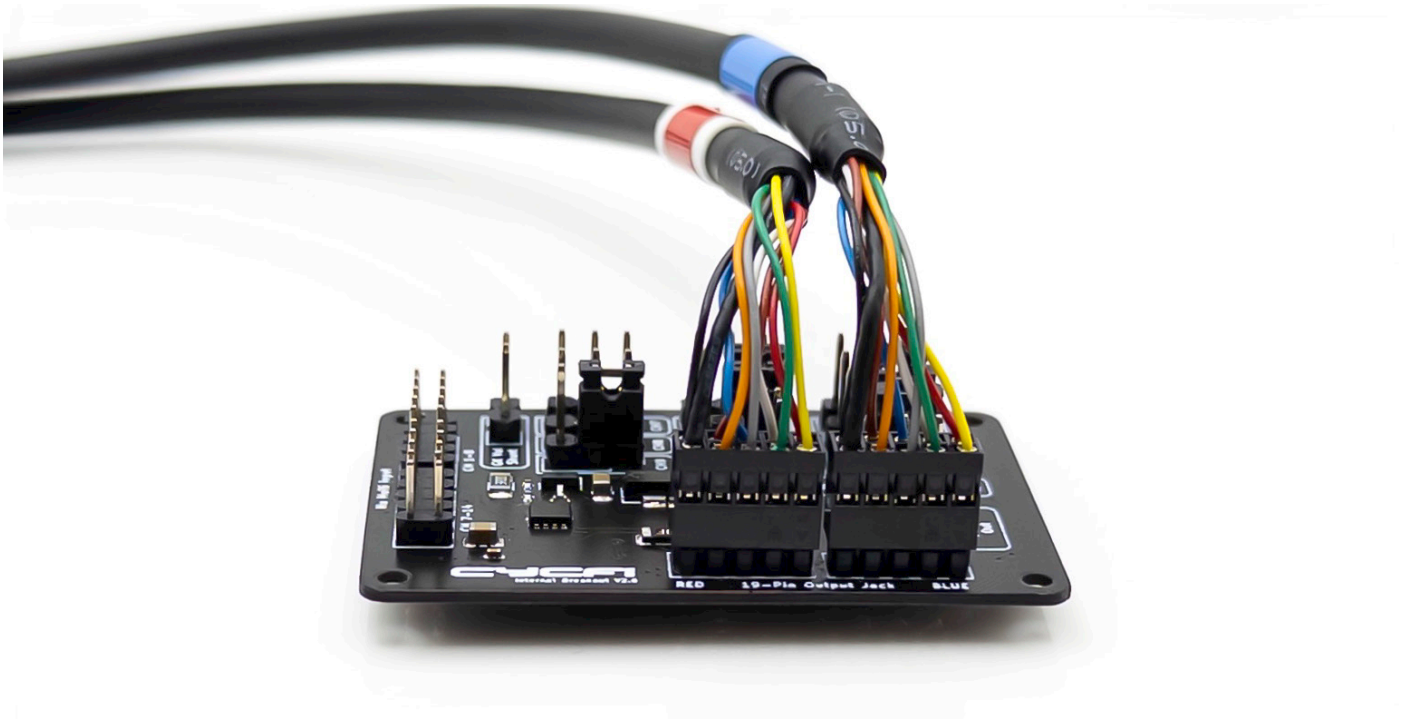
> ⚠️ **Warning**: Before applying power, double check that the connectors are correctly inserted in the proper orientation to avoid any potential damage.



Connecting the 19-pin Output Jack

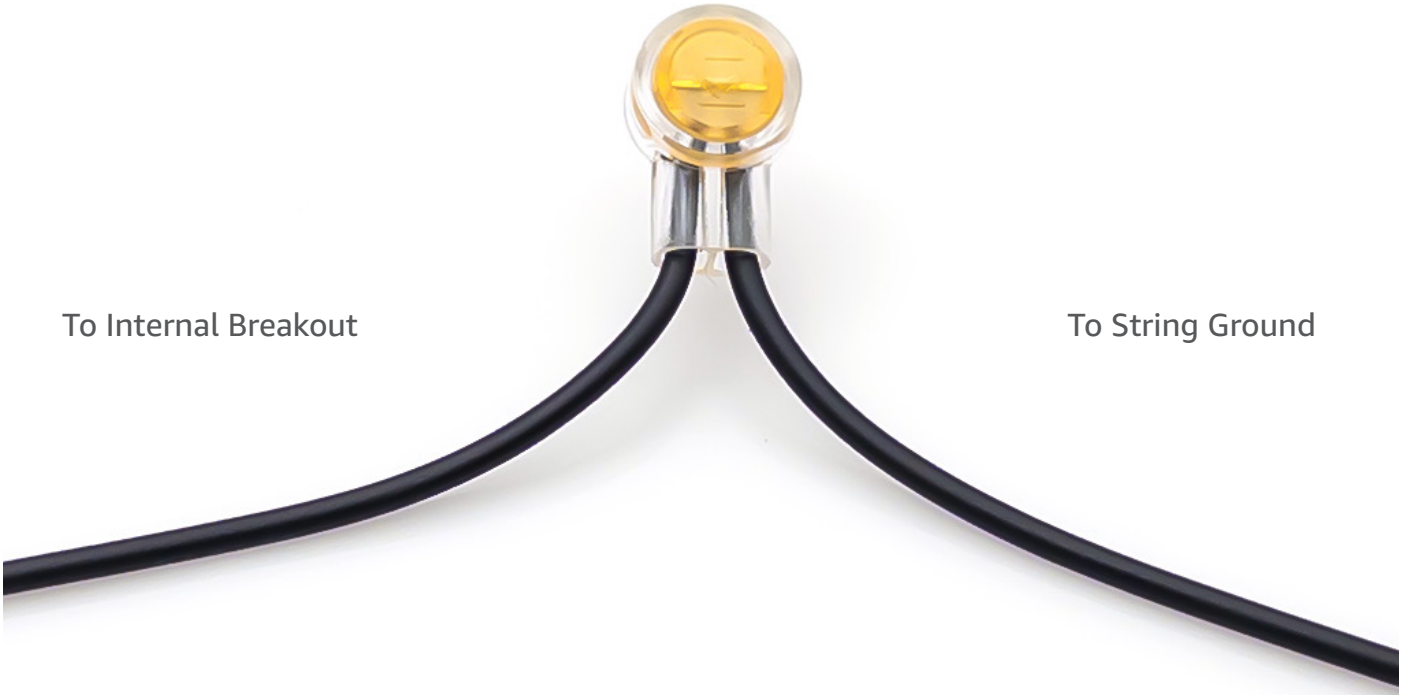
The 19-pin output jack has two connectors, one marked red and the other marked blue. The connector marked blue connects to the right header while the connector marked red connects to the left header as shown in the picture below. This is also indicated in the Internal Breakout “RED” and “BLUE” labels.

Take note of the color coding. Refer to the yellow wire as a guide. Make sure that the yellow wire is on the right side of both cables, when viewed as in the picture below.



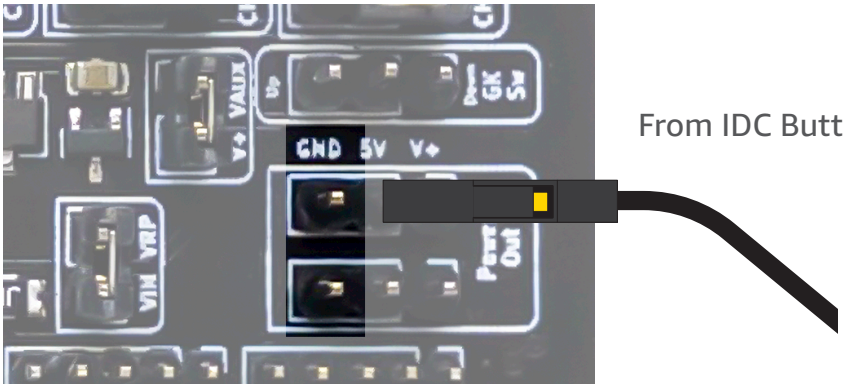
Grounding

Assuming you have a guitar ground wire connected to string ground (typically the bridge), connect this wire to the supplied 2-Wire IDC Butt. Splice the end of the wire connected to the single-pin header (provided in the package) with the end of the guitar ground wire going to the string ground. To do this, insert the bare wires inside the wire-butt connector and crimp the connector with a pair of pliers until it snaps to make a firm connection.



Insert the other end of the cable with the 1-pin female header connector to one of GND pins in the Internal Breakout. This connects your string, bridge and guitar cavities to ground and helps reduce noise. (Note: Ensure that the bridge and cavities are connected to the guitar ground wire.)

See Internal Breakout 2.6 for details.

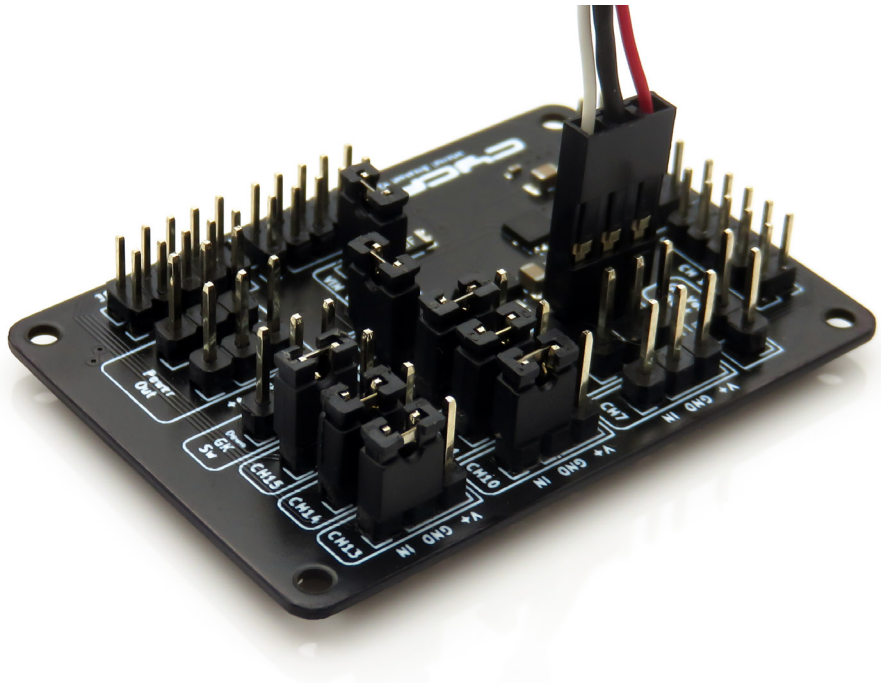


Extras

This section contains supplemental documentation covering alternatives beyond the standard Meredith setup. In this section, you will learn how to connect active pickups, as opposed to the passive pickups shown previously. You can also see instructions for connecting various CV devices, such as the CV-Switch. Finally, you'll find instructions for connecting the momentary 2-Way switch on BOSS/Roland devices as well as MIDI control for up-down program changes.

Active Pickups

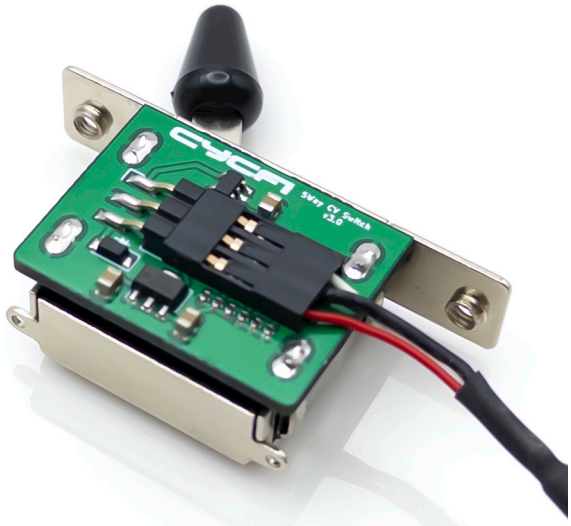
The Internal Breakout headers for external pickups are EMG compatible. When connecting an active pickup, remove the factory-installed shunt for the desired channel and insert a 3-pin cable as shown below. Take note that the red wire connects to the V+ label in the Internal Breakout. This is identical to CV connections.



CV Switch

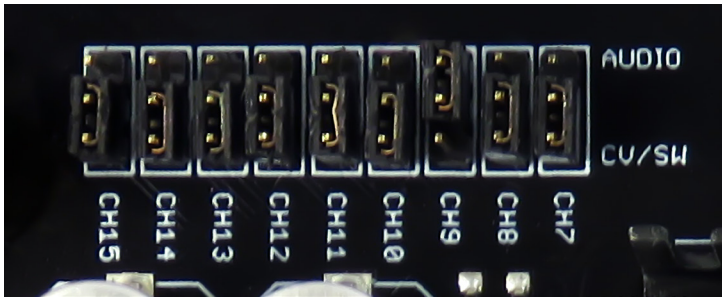
The CV switch generates a control voltage from 0V to 5V depending on the 5-way switch position. Use the 5-way CV switch to send patch/parameter changes to your outboard gear, DAW or just about anything that accepts MIDI.

To install a CV switch, connect a 3-pin cable to its header, following the orientation shown. Take note that when holding the cable vertically with the connector at the top, the red wire should be on the left, the black wire in the middle, and the white wire on the right.



Then, remove the shunt for the desired channel you want to use in the Internal Breakout and insert a 3-pin cable similar to how active pickups are connected, as shown in the previous section.

Again, if intend to connect a CV potentiometer or CV switch, make sure that the shunt on the Nexus-GK Main board is set up to function as a CV input, as shown in the image on the right.

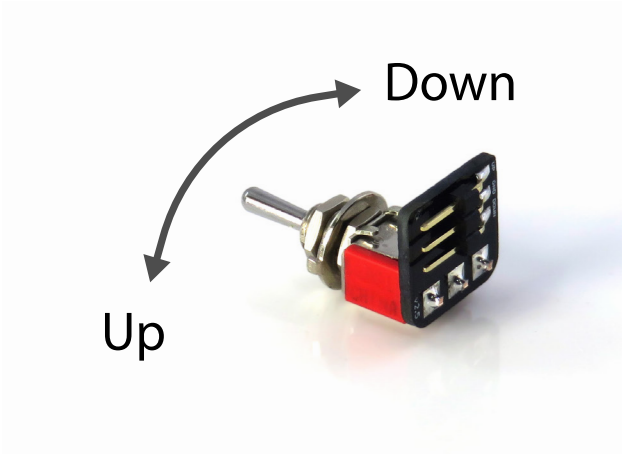


For more detailed information, please refer to the Nexus-GK documentation.

> ⚠ **Warning**: Before applying power, double check that the connectors are correctly inserted in the proper orientation to avoid any potential damage.

2-Way “GK” Switch

The 2-Way switch is an ON-OFF-ON momentary switch suitable for program change ±1. Unlike typical switches, it is momentary and does not lock to either ON positions. Flick it up or down to increment or decrement the program change number.



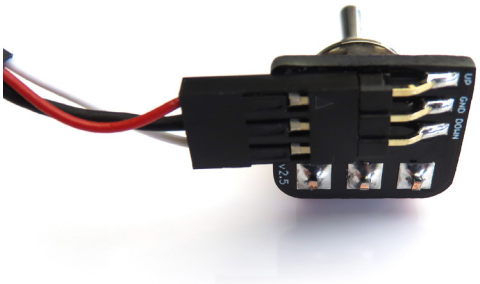
The Meredith Nu Multi Reference Guitar does not make use of the 2-Way switch, but if you intend to use the Nexus’ GK module, with support electronics for the standard 13-Pin Roland cable, the Internal Breakout board has a special connector for the switch which maps to Roland’s SW1, SW2 program up/down switch. The Nexus’ GK module also includes a shunt that allows you to increment or decrement MIDI program changes.

For more detailed information, please refer to the Nexus-GK documentation.

Specific features are integrated into the Internal Breakout for the 2-Way momentary Up/Down “GK” switch, is exclusively designated for channels 7 and 8.

See Internal Breakout 2.6 for details.

To install the 2-Way switch, connect a 3-pin cable to its header, following the orientation shown. Take note that when holding the cable vertically with the connector at the top, the red wire should be on the left, the black wire in the middle, and the white wire on the right.



To connect the other end of the cable, follow the instructions in the Internal Breakout 2.6 documentation.